The Journal of the Human Factors and Ergonomics Society

Human Factors

Volume 35, 1993

HUMAN FACTORS

The Journal of the Human Factors and Ergonomics Society

Editor
WILLIAM C. HOWELL
American Psychological Association Science Directorate

Associate Editors

F. Thomas Eggemeier
University of Dayton

Richard J. Jagacinski
Ohio State University

Editorial Board

Jack A. Adams
Emeritus, University of Illinois at Urbana-Champaign

Dee Howard Andrews
USAF Armstrong Laboratory

Robert G. Angus
Defence and Civil Institute of Environmental Medicine

Thomas J. Armstrong
University of Michigan

Jan Berkhout
University of South Dakota

Deborah A. Boehm-Davis
George Mason University

John G. Casali
Virginia Polytechnic Institute and State University

MaryLou Cheal
University of Dayton Research Institute

Nancy J. Cooke
New Mexico State University

Gregory M. Corso
Georgia Institute of Technology

William H. Cushman
Eastman Kodak Company

Ray E. Eberts
Purdue University

Pat-Anthony Federico
U.S. Navy Personnel R&D Ctr.

Donald L. Fisher
University of Massachusetts

Arthur D. Fisk
Georgia Institute of Technology

John M. Flach
Wright State University

Irwin L. Goldstein
University of Maryland

John D. Gould
IBM Watson Research Ctr.

Dennis H. Holding
University of Louisville

Barry H. Kantowitz
Battelle Human Affairs Research Ctr.

Michael J. Kelly
Georgia Tech Research Institute

Arthur F. Kramer
University of Illinois at Urbana-Champaign

Karl H. E. Kroemer
Virginia Polytechnic Institute and State University

Patrick Kyllonen
USAF Armstrong Laboratory

Lila F. Laux
Rice University

Herschel W. Leibowitz
Pennsylvania State University

Gavan Lintern
University of Illinois Aviation Research Laboratory

Michael E. Maddox
Sisyphus Associates

Elizabeth Martin
USAF Armstrong Laboratory

Donald H. Mershon
North Carolina State University

Deborah A. Mitta
Georgia Institute of Technology

Neville Moray
University of Illinois at Urbana-Champaign

Ben B. Morgan, Jr.
University of Central Florida

Robert D. O'Donnell
NTI, Inc.

John J. O'Hare
Irving, Texas

Paul L. Olson

Raja Parasuraman
Catholic University of America

David L. Post
USAF Armstrong Laboratory

Dennis L. Price
Virginia Polytechnic Institute and State University

Wesley Regian
USAF Armstrong Laboratory

Wendy A. Rogers
Memphis State University

Eduardo Salas
Naval Training Systems Ctr.

Penelope M. Sanderson
University of Illinois at Urbana-Champaign

Wayne L. Shebilske
Texas A&M University

David Shinar
Ben Gurion University of the Negev

Carlla S. Smith
Bowling Green State University

Robert D. Sorkin
University of Florida

Janet J. Turnage
University of Central Florida

Michael Venturino
State University of New York at Geneseo

Michael A. Vidulich
USAF Armstrong Laboratory

Neff Walker
Georgia Institute of Technology

Joel S. Warm
University of Cincinnati

Christopher D. Wickens
University of Illinois at Urbana-Champaign

Michael S. Wogalter
North Carolina State University

Jeffrey C. Woldstad
Virginia Polytechnic Institute and State University

David D. Woods
Ohio State University

Publications Manager Lois Smith
Publications Associate Darcy L. Pettigrew
Editorial Assistant Kelly Bushinsky
Technical Proofreaders Jean R. Huntoon
Richard B. Huntoon

HUMAN FACTORS, 1993, 35(4), 757–763

HUMAN FACTORS—VOLUME 35

TABLE OF CONTENTS

Cognitive Predictors of Vigilance, *Gerald Matthews, D. Roy Davies, and Peter J. Holley* 3
The Visibility of Symbolic Highway Signs Can Be Increased among Drivers of All Ages, *Donald W. Kline and Perry Fuchs* 25
Performance under Dichoptic versus Binocular Viewing Conditions: Effects of Attention and Task Requirements, *Ruth Kimchi, Daniel Gopher, Yifat Rubin, and David Raij* 35
Angle of Hard Copy and Text-Editing Performance, *Jay L. Brand and Kenneth W. Judd* ... 57
Emergent Features and Graphical Elements: Designing More Effective Configural Displays, *Kevin B. Bennett, Mona L. Toms, and David D. Woods* 71
Effects of Age and Task Similarity on Dual-Task Performance, *J. E. Korteling* 99
Optimal Performance Engineering: Good, Better, Best, *Donald L. Fisher* 115
An Application of the Analytic Hierarchy Process: A Rank-Ordering of Computer Interfaces, *Deborah A. Mitta* 141
Wayfinding by Newcomers in a Complex Building, *Darrell L. Butler, April L. Acquino, Alicia A. Hissong, and Pamala A. Scott* 159
Further Studies of Psychophysically Determined Maximum Acceptable Weights and Forces, *Vincent M. Ciriello, Stover H. Snook, and Gareth J. Hughes* 175
Redundant Use of Luminance and Flashing with Shape and Color as Highlighting Codes in Symbolic Displays, *Karl F. Van Orden, Joseph DiVita, and Matthew J. Shim* 195
Disruption and Maintenance of Skilled Visual Search as a Function of Degree of Consistency, *Mark D. Lee and Arthur D. Fisk* 205
Modeling Strategic Behavior in Human-Automation Interaction: Why an "Aid" Can (and Should) Go Unused, *Alex Kirlik* 221
Real-Time Expert System Interfaces, Cognitive Processes, and Task Performance: An Empirical Assessment, *Leonard Adelman, Marvin S. Cohen, Terry A. Bresnick, James O. Chinnis, Jr., and Kathryn B. Laskey* 243
Recommendations for Mental Workload Measurement in a Test and Evaluation Environment, *W. W. Wierwille and F. Thomas Eggemeier* 263
Repetitive Motion Disorders: The Design of Optimal Rate-Rest Profiles, *Donald L. Fisher, Robert O. Andres, David Airth, and Stephen S. Smith* 283
Operation of Controls on Consumer Products by Physically Impaired Users, *H. Kanis* 305
Cognitive Function at High Altitude, *Arthur F. Kramer, John T. Coyne, and David L. Strayer* 329
Cockpit Checklists: Concepts, Design, and Use, *Asaf Degani and Earl L. Wiener* 345
Headphone Localization of Speech, *Durand R. Begault and Elizabeth M. Wenzel* 361
Effect of Electronic Performance Monitoring on Job Design and Worker Stress: Review of the Literature and Conceptual Model, *Pascale Carayon* 385
Aggregation Bias and the Use of Regression in Evaluating Models of Human Performance, *Neff Walker and Richard Catrambone* 397
Experimental Evaluation of a Model of Mental Workload, *P. A. Hancock and J. K. Caird.* 413
Spatial and Temporal Characteristics of Rapid Cursor-Positioning Movements with Electromechanical Mice in Human-Computer Interaction, *Neff Walker, David E. Meyer, and John B. Smelcer* 431

Conceptual Graph Analysis: Knowledge Acquisition for Instructional System Design, *Sallie E. Gordon, Kimberly A. Schmierer, and Richard T. Gill* 459
Effects of Stereoscopic and Rotational Displays in a Three-Dimensional Path-Tracing Task, *Randy L. Sollenberger and Paul Milgram* 483
Motion Extrapolation Performance: A Linear Model Approach, *Naum Yakimoff, Stefan Mateeff, Walter H. Ehrenstein, and Joachim Hohnsbein* 501
Spatial Ability and Land Navigation under Degraded Visual Conditions, *V. Grayson Cu-Qlock-Knopp and Leslie A. Whitaker* 511
Curvilinear Approach to an Intersection and Visual Detection of a Collision, *Catherine Berthelon and Daniel Mestre* 521
Effects of Reduced Transmittance Film on Automobile Rear Window Visibility, *Mark Freedman, Paul Zador, and Loren Staplin* 535
Pistol Grip Power Tool Handle and Trigger Size Effects on Grip Exertions and Operator Preference, *Seoungyeon Oh and Robert G. Radwin* 551
Measuring Subjective Workload: When Is One Scale Better then Many? *Keith C. Hendy, Kevin M. Hamilton, and Lois N. Landry* 579
Psychophysical Determinants of Stress in Sustained Attention, *Traci L. Galinsky, Roger R. Rosa, Joel S. Warm, and William N. Dember* 603
Using Meta-Analysis to Compare the Predictive Validity of Single- and Multiple-Task Measures to Flight Performance, *Diane L. Damos* 615
Effects of Task Probability on Integral and Separable Task Performance, *Greg C Elvers, Ravi S. Adapathya, Ken M. Klauer, David E. Kancler, and Nancy J. Dolan* 629
Effects of Part-Task Training on Memory Set Unitization and Retention of Memory-Dependent Skilled Search, *Christopher J. Whaley and Arthur D. Fisk* 639
Effects of Three Types of Flight Simulator Visual Scene Detail on Detection of Altitude Change, *James A. Kleiss and David C. Hubbard* 653
Encoding Apparent Motion in Animated Mimic Displays, *Kevin B. Bennett* 673
Improving Auditory Warning Design: Quantifying and Predicting the Effects of Different Warning Parameters on Perceived Urgency, *Elizabeth J. Hellier, Judy Edworthy, and Ian Dennis* 693
Head-Up Auditory Displays for Traffic Collision Avoidance System Advisories: A Preliminary Investigation, *Durand R. Begault* 707
A Task-Analytic Approach to the Temporal and Spatial Placement of Product Warnings, *J. Paul Frantz and Timothy P. Rhoades* 719
Age and Fatal Work-Related Falls, *Jacqueline Agnew and Anthony J. Suruda* 731
The Efficiency of Instructional Conditions: An Approach to Combine Mental Effort and Performance Measures, *Fred G. W. C. Paas and Jeroen J. G. Van Merriënboer* 737
Control/Display Relationship of the Four-Burner Stove: A Reexamination, *Sheng-Hsiung Hsu and Yu Peng* 745